

error, and if the electro-chemical decomposition *is in this case also definite*. In some chemical works 58 is given as the chemical equivalent of tin, in others 57.9. Both are so near to the result of the experiment., and the experiment itself is so subject to slight causes of variation (as from the absorption of gas in the volta-electrometer (451), etc.), that the numbers leave little doubt of the applicability of the *law of definite action* in this and all similar cases of electro-decomposition.

527. It is not often I have obtained an accordance in numbers so near as that I have just quoted. Four experiments

were made on the protochloride of tin, the quantities of gas evolved in the volta-electrometer being from 2.05 to 10.29 cubic inches. The average of the four experiments gave 58.53 as the electro-chemical equivalent for tin.

528. The chloride remaining after the experiment was pure protochloride of tin; and no one can doubt for a moment that the equivalent of chlorine had been evolved at the *anode*, and, having formed bichloride of tin as a secondary result, had passed away.

529. *Chloride of lead* was experimented upon in a manner exactly similar, except that a change was made in the nature of the positive electrode; for as the chlorine evolved at the *anode* forms no perchloride of lead, but acts directly upon the platina, it produces, if that metal be used, a solution of chloride of platina in the chloride of lead; in consequence of which a portion of platina can pass to the *cathode*, and would then produce a vitiated result. I therefore sought for, and found in plumbago, another substance, which could be used safely as the positive electrode in such bodies as chlorides, iodides, etc.

The chlorine or iodine does not act upon it, but is evolved in the free state; and the plumbago has no re-action, under the circumstances, upon the fused chloride or iodide in which it is plunged. Even if a few particles of plumbago should separate by the heat or the mechanical action of the evolved gas, they can do no harm in the chloride.

530. The mean of three experiments gave the number of 100.85 as the chemical equivalent for lead. The chemical equivalent is 103.5.

The deficiency in my experiments I attribute to the solution of part of the gas (451) in the

volta-eleectrometer; but  
the results leave no doubt on my mind  
that both the lead and  
the chlorine are, in this case, evolved in  
*definite quantities* by  
the action of a given quantity of  
electricity (549, etc.).  
531. *Chloride of antimony*.—It was in  
endeavouring to obtain